

CLAIMS

1. A device for conveying articles, comprising:
an array of rollers set alongside one another so as to define, by means of homologous generatrices, a plane of conveyance of said articles;
a plurality of motor-driven units for said rollers, each motor-driven unit being able to bring about rotation of at least one respective roller of said array; and
a control unit, which acts on said motor-driven units and is able to control said motor-driven units with a speed that is selectively determined in such a way that said motor-driven units are divided into at least one first set of motor-driven units, with associated thereto a respective first set of rollers, which move at at least one first speed and at least one second set of motor-driven units with associated thereto a respective second set of rollers, which move at at least one second speed, said respective first and second sets of rollers being contiguous to one another along an ideal demarcation line, with said control unit being able to assign each motor-driven unit selectively to one or the other of said at least one first set and said at least one second set of motor-driven units so as to displace selectively said ideal demarcation line in the direction of advance of said articles on the array of rollers.
2. The device according to claim 1, characterized in that said rollers are ordered in conveying units, each conveying unit having associated thereto a respective motor-driven unit and comprising a respective set of rollers.
3. The device according to claim 2, characterized in that said conveying units each comprise at least two adjacent rollers.
4. The device according to claim 1, characterized in that a plurality of sensor elements for detecting the presence of said articles at least in a position corresponding to said at least one respective said first set of rollers.

5. A system for conveying articles, comprising:

- a storage device, which comprises a plurality of mobile shelves with an input section, where a plurality of said shelves are substantially set on top of one another and are able to move in a vertical direction; and
- a device for conveying articles according to claim 1, which is able to receive a flow of incoming articles to be transferred onto the shelves of said storage device, in which said at least one first respective set of rollers and said at least one second respective set of rollers constitute, respectively:
 - a first conveying structure for receiving said flow of incoming articles, and
 - a second conveying structure for transferring said articles from said conveying device to the shelves of said storage device, the speed of first and second conveying structures being independently controllable.

6. The system according to claim 5, characterized in that it comprises a control unit configured for varying selectively a quantity of one of the following:

- the speed of movement of the shelves of said storage device ;
- the speed of movement of the first conveying structure;
- the speed of movement of the second conveying structure; and
- the position of a demarcation line between the first and second conveying structures in order to:
 - form and keep on said at least one respective second set of rollers an accumulation of said articles to be transferred onto the shelves of said storage device, and
 - transfer, in a way synchronized with the movement of articles, from said accumulation to the shelves of said storage device.

7. A method for actuating the system according to claim 1, characterized in that it comprises the operations of:

- constituting, on said at least one second respective set of rollers, an accumulation of said articles;

- applying to the motor-driven units of said at least one first set of rollers a speed of movement such as to cause the articles conveyed by said respective second set of rollers to move along said second respective set of rollers with a speed that is at least marginally higher than the speed of movement imparted on the articles which are on said respective set of rollers by motor-driven units of said first set;

- controlling the speed of movement of the motor-driven unit of said at least one second set of rollers so as to transfer to the shelves of said storage device articles from said accumulation;

- monitoring the presence of articles in said accumulation;

- monitoring the presence of articles in said accumulation by detecting conditions in which the number of articles in said accumulation is insufficient and sufficient, respectively, for ensuring said transfer with said synchronized sequence; and

- selectively checking whether said motor-driven unit belongs to said at least one first set or to said at least one second set of rollers, by selectively varying the position of said ideal demarcation line, displacing said line towards said storage device and away from said storage device when the number of articles in said accumulation is insufficient and excessive, respectively.

8. The method according to claim 7, characterized in that it comprises the operation of increasing the speed of movement of the motor-driven units of said at least one second set of rollers when the number of articles comprised in said accumulation is insufficient.

9. The method according to claim 7, characterized in that it comprises the operation of increasing the speed of movement of the motor-driven units of said at

least one second set of rollers when the number of articles comprised in said accumulation is excessive.

10. The method according to claim 7, characterized in that it comprises the operation of reducing the speed of movement of the shelves of said storage device when the number of articles comprised in said accumulation is insufficient.

11. The method according to claim 7, characterized in that it comprises the operation of increasing the speed of movement of the shelves of said storage device when the number of articles comprised in said accumulation is excessive.